REMARKS

The Official Action of March 22, 2005, and the prior art cited and relied upon therein have been carefully studied. Favorable reconsideration and such allowance are respectfully urged.

Claims 1-8 have been canceled in favor of new claims 25-34. Claims 25-34 remain in the application for consideration while claims 9-24 have been withdrawn from consideration as being drawn to non-elected inventions.

In response to the Examiner's objection to the specification, Applicant has deleted the sentence on page 3 referring to claim 1. Applicant respectfully submits that this objection has now been overcome.

The Examiner has further rejected claims 1-7 under 35 U.S.C. §103(a) as being unpatentable over Horvath '663 in view of Dee '999 or Meyer '760, and claim 8 under 35 U.S.C. §103(a) as being unpatentable over the same prior art applied against claims 1-7 further in view of Fromovich '673. Claims 1-7 are also rejected under 35 U.S.C. §103(a) as being unpatentable over Gogolewski '699 in view of Dee or Meyer. Applicant respectfully traverses all of these rejections as applied against new claims 25-34.

New independent claim 25 includes the features of original claims 1 and 11.

New claim 26 corresponds to original claim 12.

New claim 27 corresponds to original claim 4 including features from original claim 14.

New claim 28 is directed to the size of the passages set out in claim 25 which are disclosed in paragraph 0035, lines 8-10 of the specification.

New independent claim 29 includes the features of original claim 1 with the additional features of the micro-meso-macro-structural indentations of original claim 19.

New independent claim 30 includes the features of original claim 1 and the surface attached osteoblasts of original claim 2.

New claim 31 is directed to a preference of bone regeneration as in original claim 1.

New claim 32 includes the features of the biological anchoring of original claim 1 specified in original claim 15.

New claim 33 specifies the organic molecules of claim 8 to the specification of original claims 16 and 17.

New claim 34 is directed to a device comprising two membranes as shown in Figs. 9 and 10 of the specification which allow repair of large lesions in bones.

Review of the prior art patent to Horvath indicates that it is limited to:

- a membrane suitable as a component in a device for the regeneration of tissue by means of callus distraction,
- a permeable membrane at least for serum, as it comprises pores,
- a stable membrane,
- a membrane having means for moving during tissue regeneration.

However, Horvath clearly does not teach or show the following features of new independent claim 25:

- a carrier that is provided with a plurality of passages,
- means for biological anchoring and adhesion of tissue cells on one side of the membrane.

The Dee and Meyer patents disclose the use of small peptides attached to the surface of implant devices for improving cell adhesion. For increasing the adhesion properties of the membrane, however, it is not logical to add additional passages, because these reduce the size of the surface of the membrane that is in contact with the regenerating tissue. Therefore, the skilled person would not have considered adding means for biological anchoring of the cells and at the same time introduce extra passages. The passages allow a better nutrition of the regenerating tissue, which can grow faster and differentiate better. These non-obvious effects may make sense in a retrospective view, but Applicant respectfully submits clearly were unpredictable at the time of the invention.

The Examiner also cites Robinson '859 as possible prior art. However, Robinson only discloses a plate rather than a membrane with similar characteristics as the membrane disclosed by Horvath and Lutz. Again, there are no pores for permeability, but in contrast to Horvath and Lutz, the plate has no special surface provision for attachment of cells. Moreover, the plate is used for guided tissue regeneration rather than for tissue regeneration by callus distraction. There is no suggestion in Robinson to use biological means to improve attachment of cells.

In new claim 27, the peptides are also attached to the inside of the passages (Figs. 1-4). Thus, there is a synergistic effect of the passages together with the peptides (organic molecules), as the total adhesive surface is actually increased, and therefore adding an inventive step.

In claim 28, the diameter of the passages is limited to a minimal diameter. The idea of the passages is, in general terms, a better feeding of the growing tissue. In the state of the art the passage of cells across the membrane is not desired, i.e. the membrane is an "artificial boundary" ("künstliche Grenzfläche"), which is permeable for serum, but preferentially not for cells (see Horvath, page 5, liners 1-6). Serum is the leftover of blood that has been centrifuged to remove blood cells and from which fibrinogen has been removed so that it cannot clog. The smallest human cells, red blood cells, have a length of 7-8 µm, and average human cells are 10-30 µm in size. Therefore, the claimed membrane is permeable for cells.

New independent claim 29 provides for means for biological anchoring combined with the size-specific indentations at the surface of the membrane, which allows the anchoring of protein molecules, of fibrin strands, of osteoblasts and the growing in of capillaries. Their effects in combination result in a membrane ingrown into the callus, the membrane mimicking callus tissue. Such a membrane has been neither disclosed nor postulated in any of cited prior art.

New independent claim 30, the effect of the membrane mimicking callus tissue is made even stronger by addition of a layer of osteoblasts, which are coupled to the small peptides. The cited prior art does not disclose a membrane comprising a surface consisting of osteoblasts, as provided in claim 30 and depicted in Fig. 2. By the attachment of osteoblasts the membrane becomes a living tool, which is clearly the result of an inventive idea not suggested before. Moreover, the manufacture of membranes and the culturing of living cells are greatly different technologies, which makes it unlikely that the skilled person would combine information from these two fields to construct a membrane comprising a surface of osteoblasts.

As indicated above, the addition of passages, allowing the callus tissue to be better connected with the encompassing tissue, being adequately supplied with nutrients and oxygen (from red blood cells) and in a function more like a tissue replacement than like a barrier is a primary inventive feature of the claimed invention. Applicant respectfully submits that the cited prior art neither teaches nor suggests this feature. Accordingly, Applicant submits that the claimed invention clearly patentably defines over the cited prior art.

The prior art documents made of record and not relied upon have been noted along with the implication that such documents are deemed by the PTO to be insufficiently pertinent to warrant their applications against any of applicant's claims.

Favorable reconsideration and allowance are earnestly solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By
Norman J. Latker
Registration No. 19,963

NJL:ma
Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528
G:\BN\I\isle\horvath1\pto\Amendment-A.doc